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*Via electronic mail*

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Re: LWG's Concerns with the National Remedy Review Board and Contaminated Sediments  
Technical Advisory Group Recommendations for the Portland Harbor Superfund Site and  
Environmental Protection Agency, Region 10's Responses

Dear Ms. Legare and Ms. Koch,

The Lower Willamette Group's (LWG) appreciates the considerable time and effort spent by the Boards in reviewing the proposed cleanup action for the Portland Harbor Superfund Site. This letter presents the LWG's comments on the National Remedy Review Board (NRRB) and Contaminated Sediments Technical Advisory Group (CSTAG) recommendations for the Portland Harbor Superfund Site dated December 31, 2015, as well as the U.S. Environmental Protection Agency (EPA), Region 10's responses to those recommendations dated January 21, 2016.

The LWG's comments are offered for consideration by Region 10 as it prepares to issue the Proposed Plan and Record of Decision (ROD) for the Portland Harbor Superfund Site later this year. These comments are consistent with feedback on remedy selection provided by the LWG to the NRRB and CSTAG (hereafter referred to collectively as the "Boards") in October 2015. Many of the comments provided in that letter do not appear to have been addressed by the Boards' recommendations or Region 10's responses.

**1. The Boards' recommendations about principal threat waste (PTW) support an expansive and costly remedy that goes beyond precedent at comparable sediment sites to date. Further, the Boards' recommendations do not discuss what incremental risk reduction would be achieved by endorsing this new precedent.**

The Boards' recommendations appear to support a conservative new precedent regarding the definition of large areas of relatively low-level contamination as PTW requiring treatment under the NCP<sup>1</sup>. We are unaware of any other large sediment site where similar determinations have been made (e.g., the Duwamish ROD in Region 10 is inconsistent with both of these determinations).

The FS, Proposed Plan, and ROD should document a direct correlation between active remediation and substantial reduction of the highest risks identified in the baseline risk assessments.

The NCP states that EPA expects to use "treatment to address the principal threats posed by a site, wherever practicable." EPA should consider treatment of principal threat or other remediation wastes only where the treatment cost-effectively achieves greater risk reduction than other technologies or disposal options. The need for treatment of sediment destined for upland landfills should be based on the acceptance criteria of the upland facility. EPA guidance on PTW (EPA 1991) identifies PTW as materials that are "highly toxic or highly mobile that cannot be reliably contained." EPA's draft FS designated "highly toxic" sediment by multiplying  $10^{-6}$  cancer risk PRGs by 1,000 to identify sediment threshold concentrations that correspond to  $10^{-3}$  cancer risk. This approach is inconsistent with EPA guidance, which describes PTW as a source of "direct exposure." EPA's cancer risk is based on fish consumption pathways, which are, by definition, indirect pathways from sediment through fish to people. Further, cancer risk exposure is a long-term risk, which is not consistent with the term "highly toxic."

In addition, contrary to EPA's draft FS approach, the presence of highly toxic or mobile material does not by itself constitute PTW (EPA 1991). Per guidance, in situ treatment of principal threat materials should be required only if contaminants cannot otherwise be reliably contained. Similarly, EPA guidance (EPA 2005) states that, "For the majority of sediment removed from Superfund sites, treatment is not conducted prior to disposal, generally because sediment sites often have widespread low-level contamination, which the NCP acknowledges is more difficult to treat." EPA's current proposed approach for addressing PTW adds many millions of dollars in cost with no evaluation of the relative risk reduction achieved.

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<sup>1</sup> The LWG reviewed the recent Passaic ROD. Although that document identifies highly toxic material based on a  $10^{-3}$  cancer risk for fish consumption, the identified PTW concentrations were much higher than for Portland Harbor and treatment was determined to not be practicable or cost-effective for PTW materials. (Treatment was assumed in the Passaic FS for 5% of the material removed, but this was based on assumed RCRA hazardous waste determinations.)

## **2. The Boards' Recommendations fail to address the achievability of Region 10's preferred remedy.**

Per guidance, when project managers are developing and selecting Remedial Action Objectives (RAOs; and cleanup levels, which are the numeric expression of the RAOs), they “should evaluate whether the RAO is achievable by remediation of the site or if it requires additional actions outside the control of the project manager” (EPA 2005). It is paramount that cleanup levels “reflect objectives that are achievable from the site cleanup” (EPA 2005). At Portland Harbor, EPA has defined protectiveness in a way that cannot be achieved.

The Boards' recommendations state, “The boards recommend that the Region clearly communicate...the anticipated recovery time needed...such as the time aquatic receptor tissues will need to recover.” However, both the LWG and Region 10 (to a lesser extent) have been clear that fish tissue will not achieve acceptable cancer risk or non-cancer risk levels for many human consumption scenarios, including for the subsistence fisher or nursing infant scenarios because they are below background levels. Some of these scenarios (e.g., the nursing infant scenario) also have a higher level of uncertainty associated with the PRG relative to other scenarios evaluated. It is poor risk management to base the remedy on unachievable PRGs, especially for cases in which there is a low level of confidence in the values because of compounding uncertainties in its derivation. The focus of risk management should be on reaching achievable targets that demonstrate risk reduction. That is not possible if PRGs set below background levels are highly uncertain.

It is unclear whether the Boards disagree with this important conclusion or simply failed to evaluate it. For example, the Boards' recommendations also call for using fish tissue to measure achievement of RAOs (which, unfortunately, cannot be achieved by this metric due to concentrations from upstream sources). Further, the Boards and Region 10 do not discuss the fact that acceptable tissue levels are below levels typically observed upstream. Per guidance, RAOs and PRGs should not be set below anthropogenic levels (EPA 2002).

EPA should acknowledge that any Portland Harbor sediment cleanup under consideration will not entirely eliminate risk. In particular, the cleanup will not remove fish advisories currently in place or achieve attainment of state water quality standards for the mainstem Willamette River as a whole. Consequently, fish tissue levels should not be used to determine achievement of RAOs that are below background levels.

## **3. A primary purpose of the NRRB is to control remedy costs and promote the cost-effectiveness of remedies; however, there are very few comments on overall costs of remedy and no discussion of the relative cost-effectiveness of the various alternatives.**

As stated in the Boards' recommendations, “The Administrator established the Board as one of the October 1995 Superfund Administrative Reforms to help control response costs and promote consistent and cost-effective remedy decisions...The Board review is intended to help control remedy costs and to promote both consistent and cost-effective decisions. Consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the

National Oil and Hazardous Substances Pollution Contingency Plan (NCP), in addition to being protective, all remedies are to be cost-effective.” The LWG is concerned that the Boards’ comments did not substantively address input regarding costs, perhaps due to the limited time in which the Boards had to conduct the review, leading to the result that this important function of the Boards has not been served. Moreover, the Boards’ few comments on costs focus on very specific cost factors that the LWG’s comments pointed out have been inadequately estimated by EPA Region 10 (e.g., mitigation cost, professional technical services, offloading, and dewatering), ignoring the very significant issues raised by the LWG FS comments with respect to these and very many other estimations.

EPA guidance reinforces the need to weigh remedial alternative cost against incremental risk reduction, stating that “[t]he evaluation of an alternative’s cost-effectiveness is usually concerned with the reasonableness of the relationship between the effectiveness afforded by each alternative and its costs when compared to other available options” (EPA 2005). A “[c]areful evaluation of site risks...help[s] to prevent implementation of costly remediation programs that may not be warranted” (EPA 1996). The Boards’ view of the relative cost-effectiveness of the alternatives (including Region 10’s currently preferred alternative) is currently unclear and needs to be provided to Portland Harbor stakeholders.

It is our opinion that Region 10’s draft FS relies on qualitative analyses that underestimate costs and overestimate effectiveness and risk reduction due to excessively unrealistic assumptions (e.g., time to perform alternatives) and incomplete or missing information. This leads to unrealistic alternatives that are not appropriately linked to risk reduction and, therefore, are unlikely to be cost-effective. Examples of significant LWG concerns that are not addressed by EPA’s draft FS or the Boards’ recommendations include the following:

- No discussion of the risk reduction achieved by the alternatives relative to the estimated costs across those same alternatives.
- The absence of an adequate comparison of the relative effectiveness and cost-effectiveness of dredging, capping, monitored natural recovery (MNR), thin-cover placement, use of activated carbon, and other remedial technologies as applied to specific sub-areas of the site. Assigning and comparing different technologies to the same sub-areas in the FS would allow EPA to demonstrate whether its selected combination of technologies will more cost-effectively reduce risks as compared to other potential technology combinations.
- Inadequate evaluation of short-term effectiveness, including no quantitative evaluation of impacts to water quality, construction worker safety, the community, or the wider environment (e.g., air impacts).
- Cost estimates that are only provided on a site-wide spatial scale and that include unrealistic assumptions, omit critical cost components, and contain extensive errors.

Properly evaluating the costs and cost-effectiveness of each remedial alternative is crucial to ensuring compliance with CERCLA and NCP directives.

In addition, costs should be broken down on a Sediment Management Area (SMA) basis (or similar) so that EPA can evaluate the cost-effectiveness of its selected remedy in areas of the site

that pose relatively more or less risk. This would also allow potentially responsible parties to work cooperatively with EPA toward consent decrees to implement EPA's remedy through a performance settlement.

**4. The Boards' Recommendations did not address the LWG's comments concerning flexibility in remedy design and implementation.**

The EPA draft FS relies on broad assumptions and generalizations to complete the analysis of remedial alternatives. Whereas such assumptions may have facilitated the evaluation of alternatives in the FS, they should not be used in the Proposed Plan or ROD as prescriptive requirements for remedial design/remedial action (RD/RA). Instead, flexibility should be integrated into the Proposed Plan and ROD to allow for the following changes:

- The FS, Proposed Plan, and ROD should recognize that additional site data will be collected during RD, and they should allow for the appropriate use of these data in RD to design refined and cost-effective sediment remedies. As needed, refinement decisions (e.g., technology assignments based on changing conditions) could be based on criteria set forth in the Proposed Plan and ROD.
- Even where new data are not available, the Proposed Plan and ROD should include text allowing for detailed SMA-specific engineering evaluations in RD to refine appropriate remedial technologies and approaches to cost-effectively achieve risk. The Proposed Plan and ROD should allow for determinations that differ from the simple assumptions used in FS, where they are supported by such detailed engineering evaluations.

Additionally, EPA should divide the site into Operable Units (OUs) focused on the most important SMAs. Dividing the site into OUs would allow EPA to evaluate and compare technologies on a more localized and detailed scale and would facilitate the administrative implementability of the remedy. Flexibility in remedial design will enable risk-based cleanup goals to be achieved in a more timely, effective, and cost-efficient manner.

**5. The Boards' Recommendations appear to rely on Region 10's simplistic and limited assessment of MNR effectiveness.**

Multiple lines of evidence using empirical data in the 2012 draft FS (Anchor QEA et al. 2012) prepared by the LWG indicate that natural recovery of sediments is occurring at the site in many places. Natural recovery has been further documented by the LWG's 2012 fish data and the 2014 sediment polychlorinated biphenyl data. The EPA draft FS is missing key components required by guidance (EPA 2005) to evaluate the effectiveness of MNR as a technology including: 1) an adequate conceptual site model; 2) appropriate evaluation of multiple lines of empirical evidence; and 3) a quantitative evaluation of natural recovery and the associated long-term (i.e., after "time zero") outcomes of the alternatives. Nevertheless, the Boards concluded that no long-term quantitative estimates are needed to complete the FS, which appears entirely inconsistent with EPA's 2005 sediment and FS guidance, which states, "For contaminated sediment alternatives, residual risk generally may be considered to be the risk remaining after completion of dredging, capping, or MNR." This guidance also states,

“Generally, as discussed in Chapter 2, Remedial Investigation Considerations, project managers should make use of available empirical and modeling methods for evaluating sediment stability and fate and transport, especially when there are significant differences between alternatives.” By not quantifying long-term outcomes of alternatives, EPA’s draft FS completely neglects to evaluate the long-term effects of natural recovery both within and outside of active remediation areas. Further, EPA’s comparative evaluation of alternatives is insufficient and fails to comply with NCP requirements because there is no assessment of the relative trade-offs among the alternatives at achieving cleanup goals.

The Boards and Region 10 have also ignored the LWG’s offer to continue to work with Region 10 to reduce the uncertainties associated with modeling and MNR evaluations.

**6. The Boards’ Recommendations for an “interim remedy” do not describe how that approach is any different than or superior to a permanent remedy that includes MNR, given that MNR must already include a robust monitoring and contingency action plan per guidance.**

The LWG agrees with Region 10 that there is enough information to support a final remedy at this time. Per guidance (EPA 2005), MNR as part of a final remedy already includes a robust monitoring approach and contingency for additional evaluations or remedial work, if the system appears to not be recovering at the pace expected. Rather than an interim remedy, EPA should consider the use of contingent remedies to address site-wide risks, as well as to address uncertainties within SMAs. Where significant uncertainty about the effectiveness of a technology at a particular SMA or the time frame to attain cleanup levels across a given area remains at the time of the ROD, use of contingent remedies would allow EPA administrative and engineering flexibility to adjust to conditions at the site during remedy implementation. The use of contingent remedies would be consistent with EPA guidance (EPA 2005) that states, where there are “high remedy costs...and uncertainties about the potential effectiveness or the risks of implementing the preferred sediment management approach,” a phased approach in remedy selection and implementation would be appropriate.

In closing, we appreciate the considerable time and effort spent by the Boards in reviewing the proposed cleanup action for the Portland Harbor Superfund Site. We look forward to continuing to work with EPA to address comments raised in this letter as this process moves into the Proposed Plan stages.

Sincerely,



The Lower Willamette Group

cc: Cami Grandinetti, U.S. Environmental Protection Agency, Region 10

**REFERENCES**

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